

Exclusive 2 tracks events

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Used data

general informations

Data from May 2004

Run number: 292319

Trigger vetoes: CLC, BSC1, Forward plug

Offline cuts:

Sum of BSC1 ADC counts < 6000

Sum of CLC ADC counts < 7500

Sum of energy in Forward Plug < 7.5 GeV

Events left

• After gaps requirements:	36354
• After beam halo cut:	31985
• Side EM calorimetry clean	7905
• Side HAD calorimetry clean	7403
• 2 tracks with opposite charge	348
• Central ($ \eta < 1.2$) tracks only	336
• Muons cut	317
• Cosmics cut	314
• Low Pt tracks cut	236
• Central exclusivity cuts	214 ~ 6 % of gaps data

Calorimetry

1) Side calorimeter clean - $1.2 < |\eta| < 2.1$:

- Sum of EM < 0.3 GeV
- Sum of HAD < 1 GeV

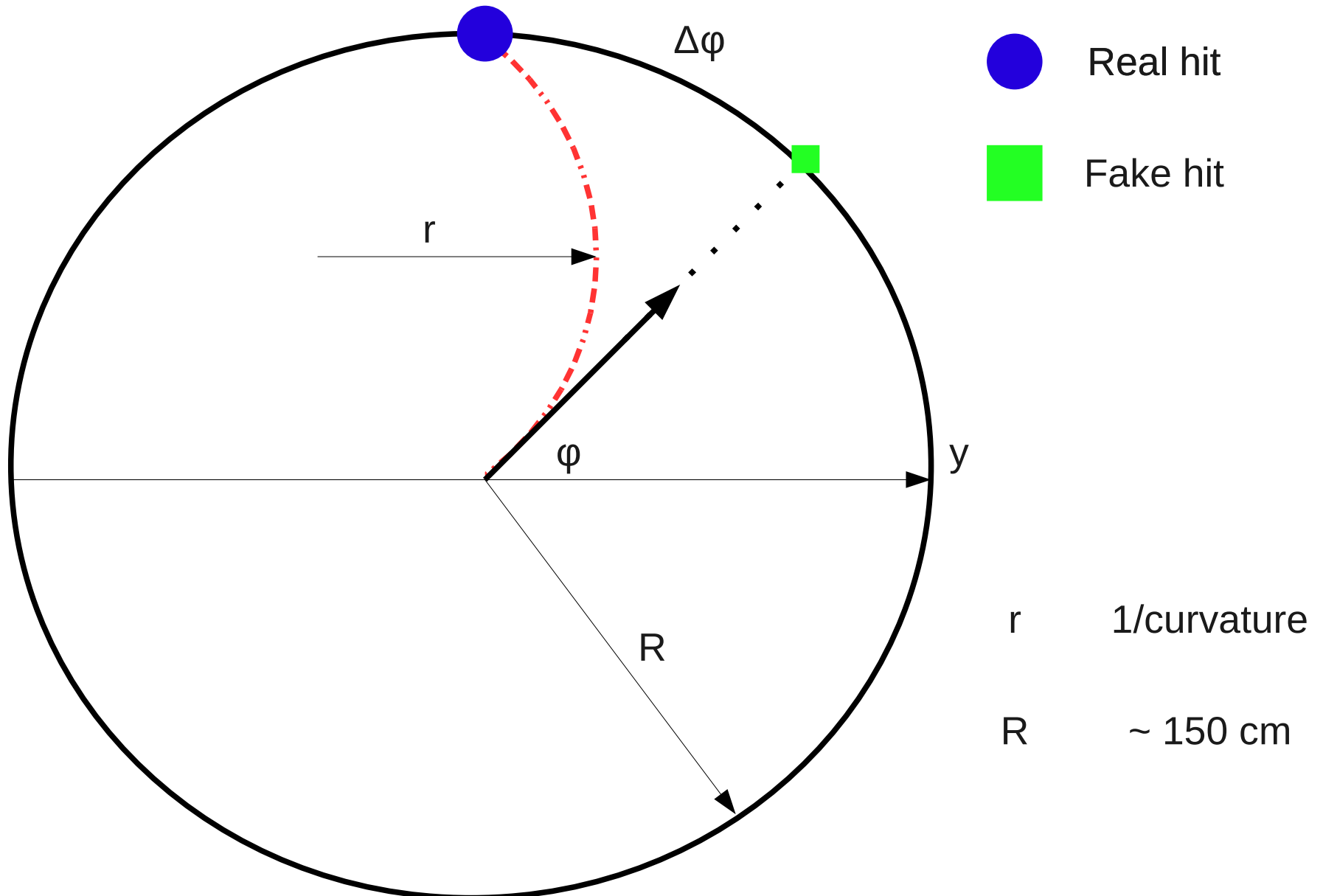
2) Central calorimeter clean:

E' = Sum of all towers E with $\Delta\phi$, $\Delta\eta$ between tracks hits that $R < 0.6$ – **bigger than before**

Condition to have exclusive 2 particles events:

$$(E' - \text{Sum of tracks } P) < 0.84 * 1 \text{ GeV}$$

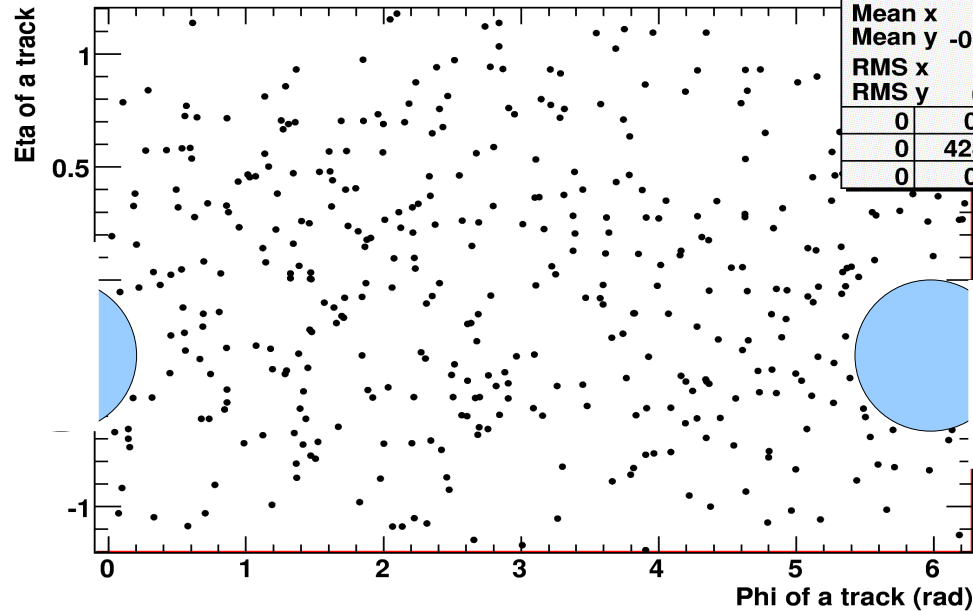
How to include tracks curvature?



$$\Delta\varphi = \pi/2 - \arccos(R / 2r)$$

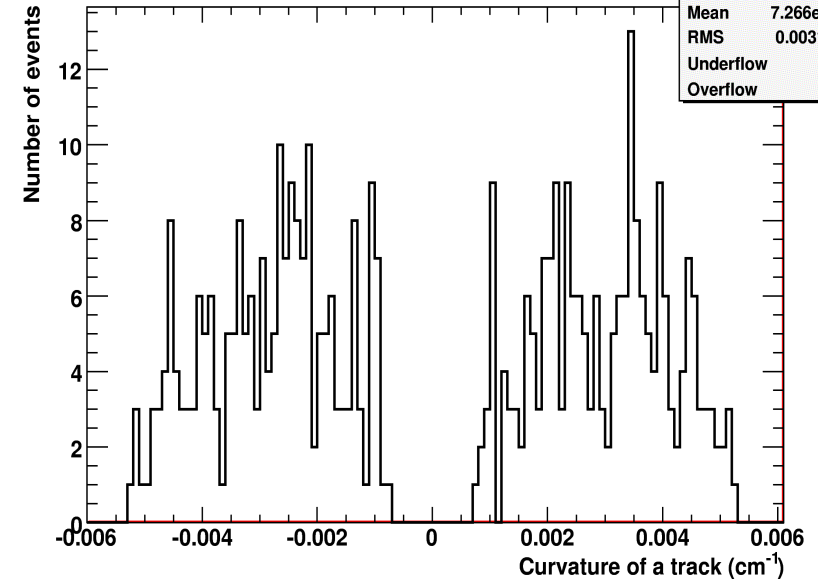
Average $\Delta\varphi \sim 0.3 \rightarrow$ important contribution !

Exclusive 2 central tracks Phi vs Eta,curvature included



Real_Hits_Phi_Eta		
Entries	428	
Mean x	3.069	
Mean y	-0.01939	
RMS x	1.766	
RMS y	0.5668	
0	0	0
0	428	0
0	0	0

2 exclusive, central tracks curvature



Exc_Track_Curv	
Entries	428
Mean	7.266e-05
RMS	0.003132
Underflow	0
Overflow	0

Still flat distribution

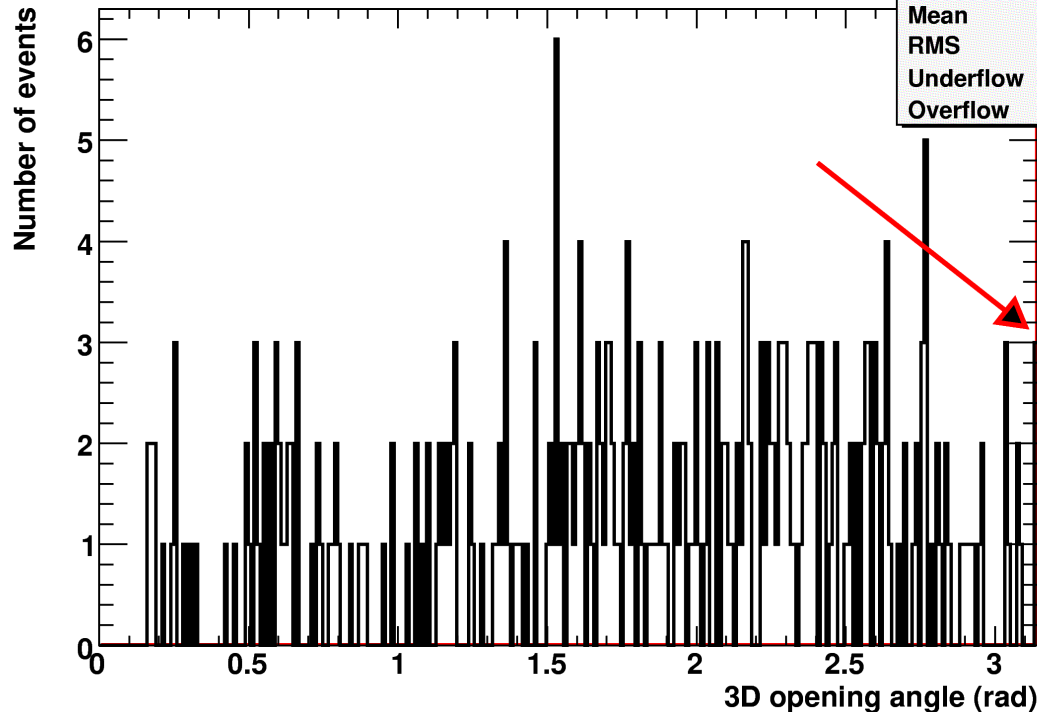
In addition:
torus-like phase space topology included

3D opening angle

3D opening angle between 2 tracks in a central region, sides calorimetry clean

Exc_Tracks_3D_Angle_P

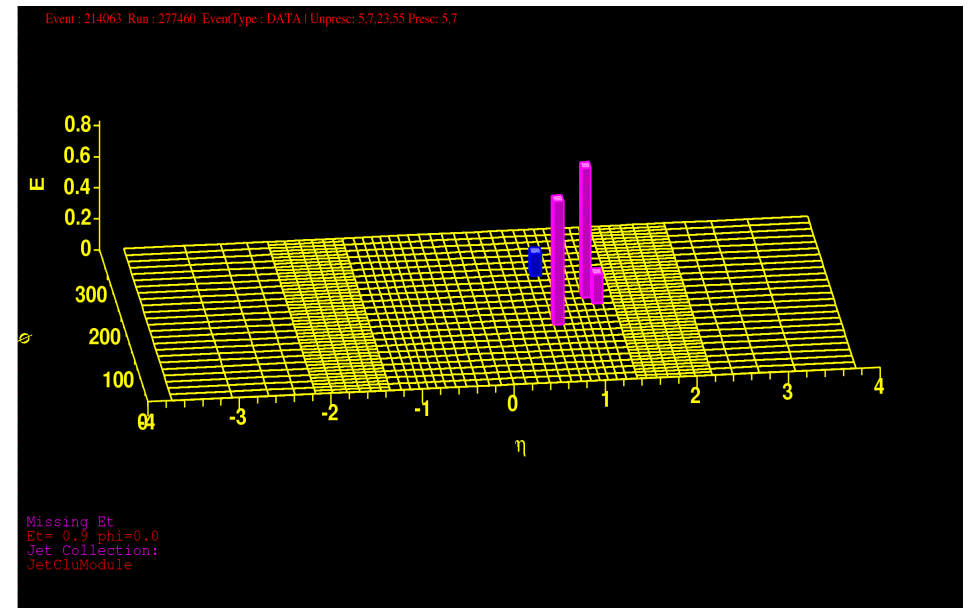
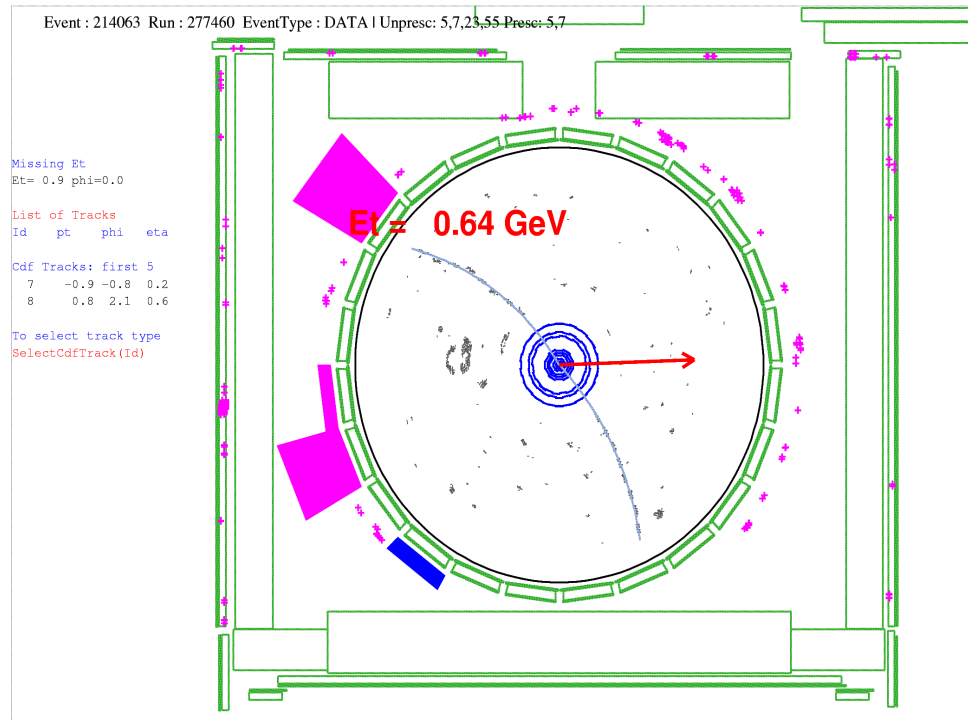
Entries	317
Mean	1.801
RMS	0.7632
Underflow	0
Overflow	0



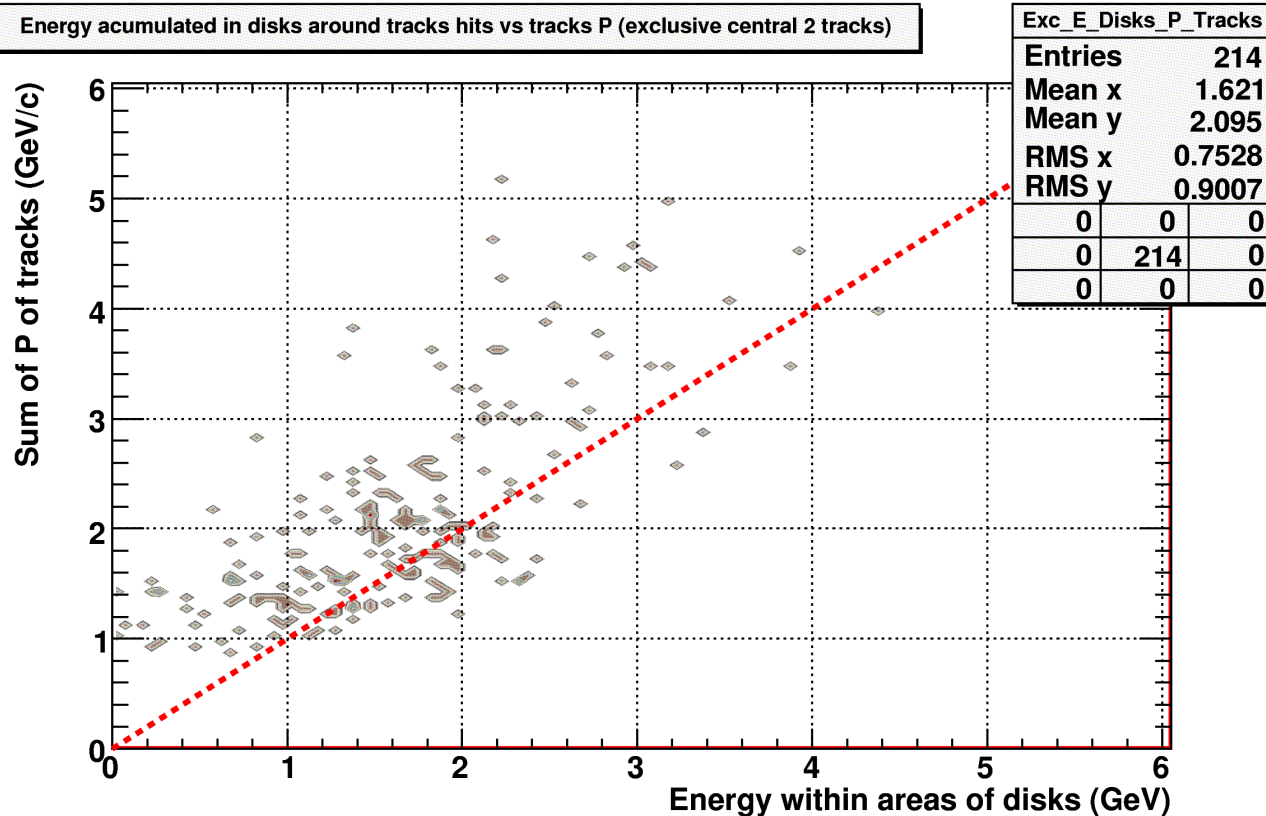
3 events with
angle > 3.1
→ cosmons

3D opening angle for exclusive 2 tracks
events (central, without muons)

Some EVD images

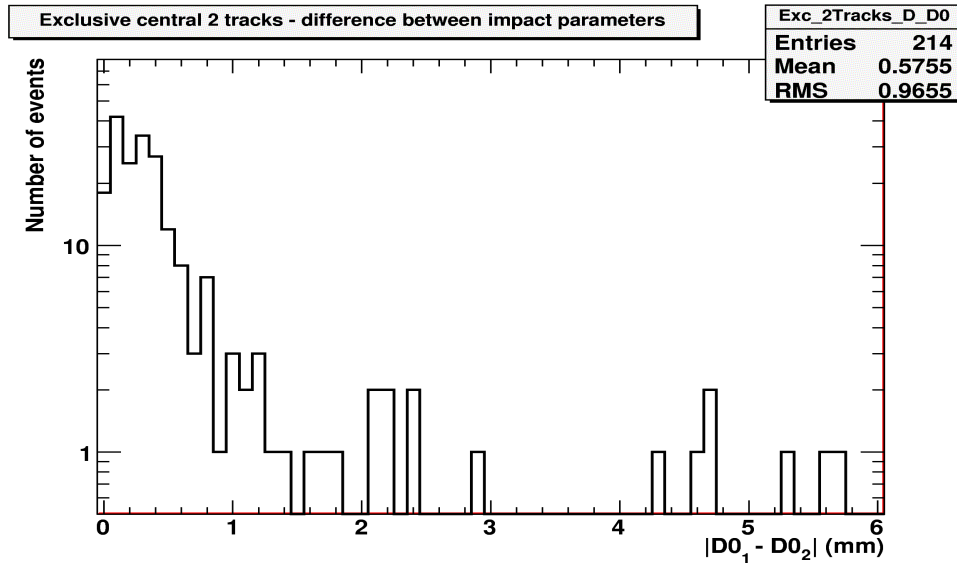


Energy inside disks vs tracks P

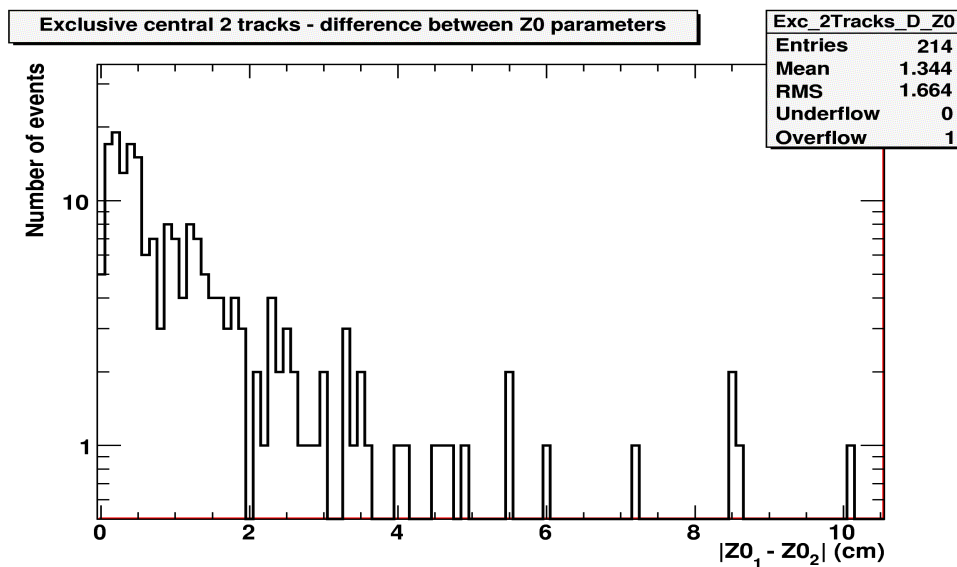


Some events with energy around 0 – to cut

Exclusive 2 tracks: $\Delta Z0$, $\Delta D0$

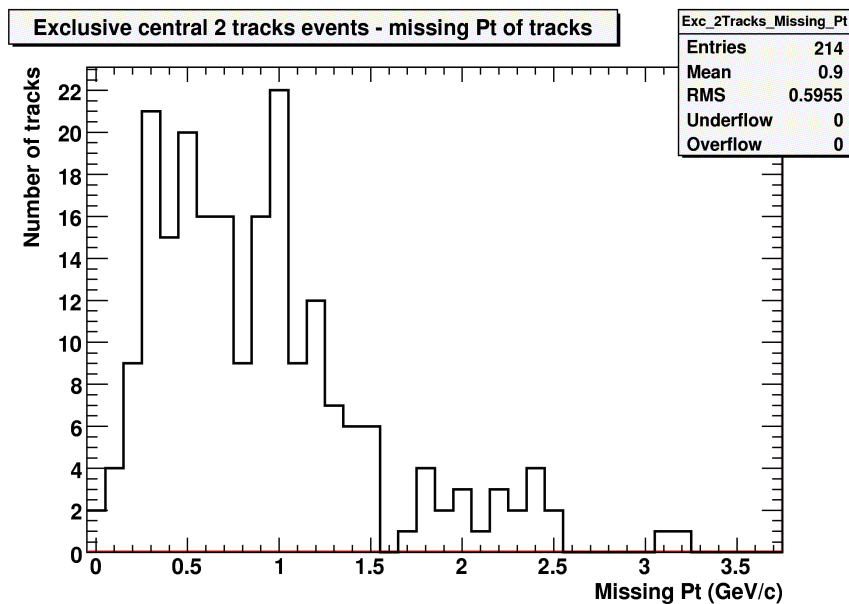
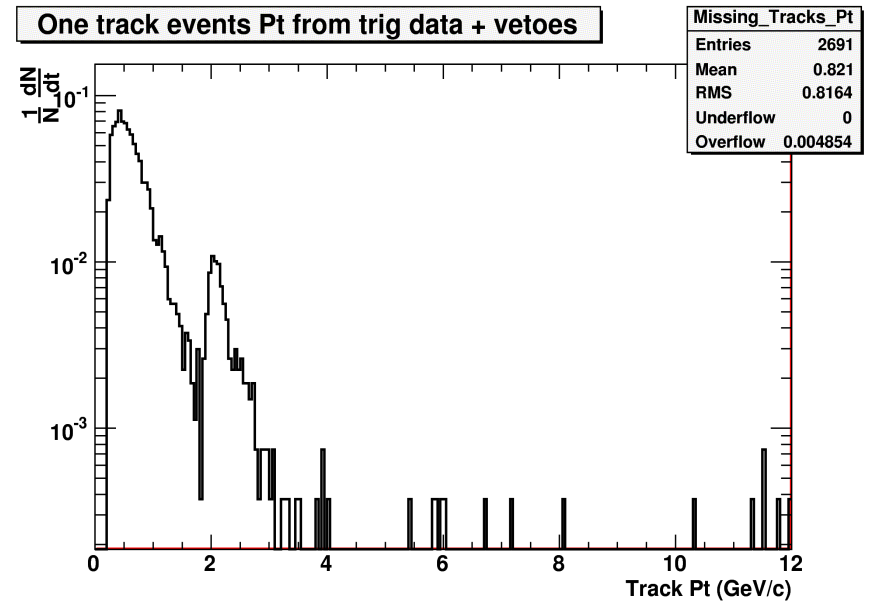
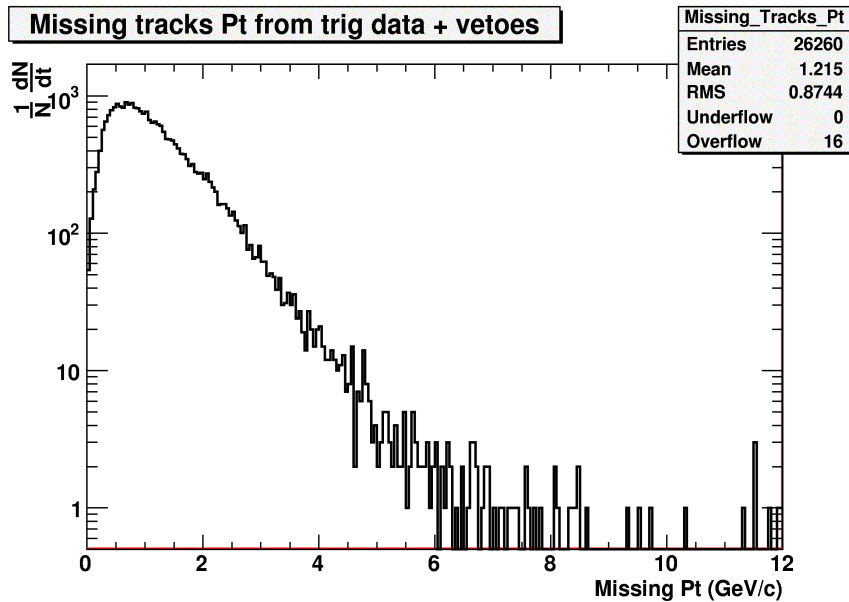


$\Delta D0$ distribution:
- to cut (1,5 mm ?)



$\Delta Z0$ distribution:
- to cut (4 cm ?)

Missing Pt



<- Exclusive 2 tracks